

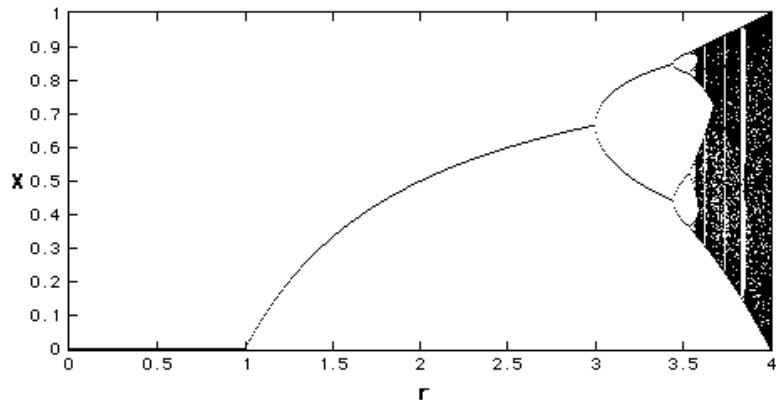
# Things to do today...

Generate the **BIFURCATION DIAGRAM** of the Logistic Map:

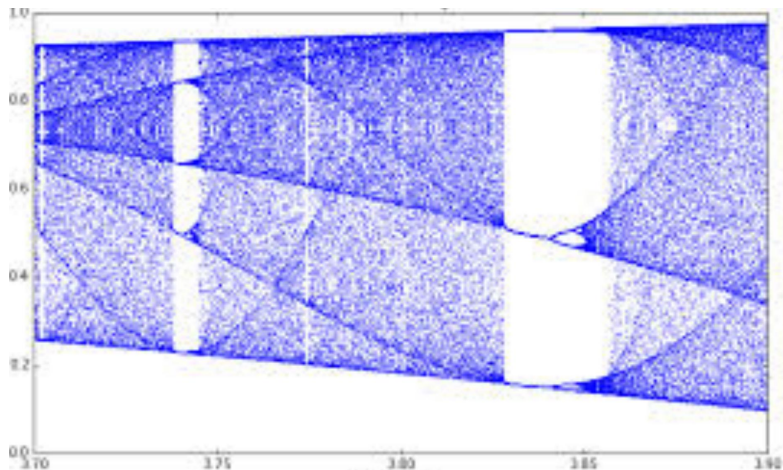
$$x_{n+1} = F(x_n) = r x_n(1 - x_n)$$

Parameter :  $0 < r \leq 4$        $x \geq 0$

# BIFURCATION DIAGRAM

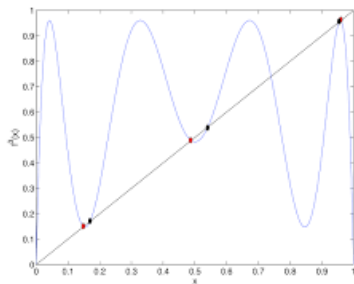
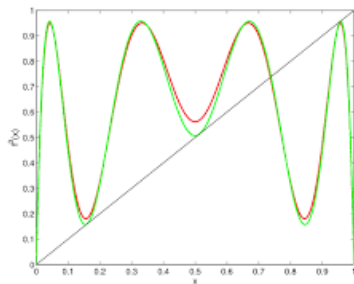


# Periodic Windows after $r = 3.57$



The bifurcation diagram is obtained by plotting, as a function of parameter  $r$ , a series of values for  $x_n$  obtained by starting with a random value  $x_0$ , iterating many times, and discarding the first points corresponding to values before the iterates converge to the attractor (so-called “transience”).

# Birth of Period 3



# Intermittency: for $r$ just below the period-3 window

